F. G. JOHNSON.

HEALTH-LIFT.

No. 183,763. Patented Oct. 31, 1876.

Fig. 1.

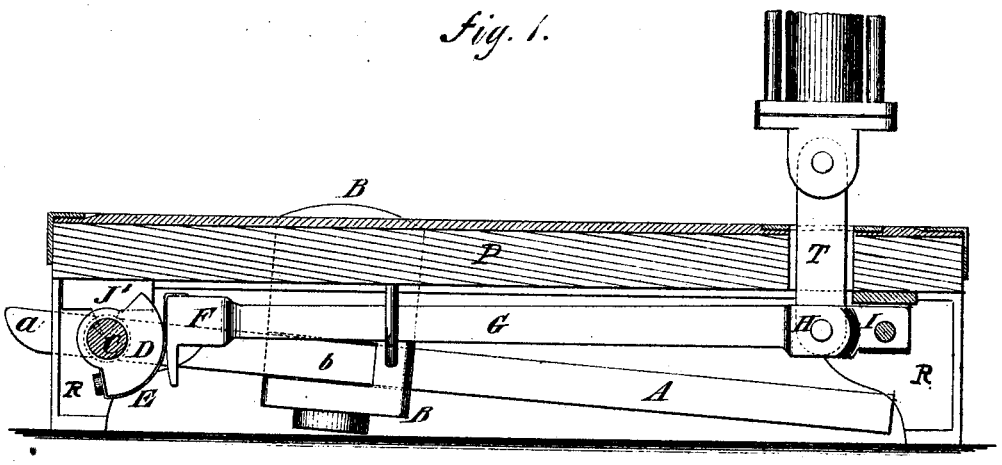


Fig. 2.

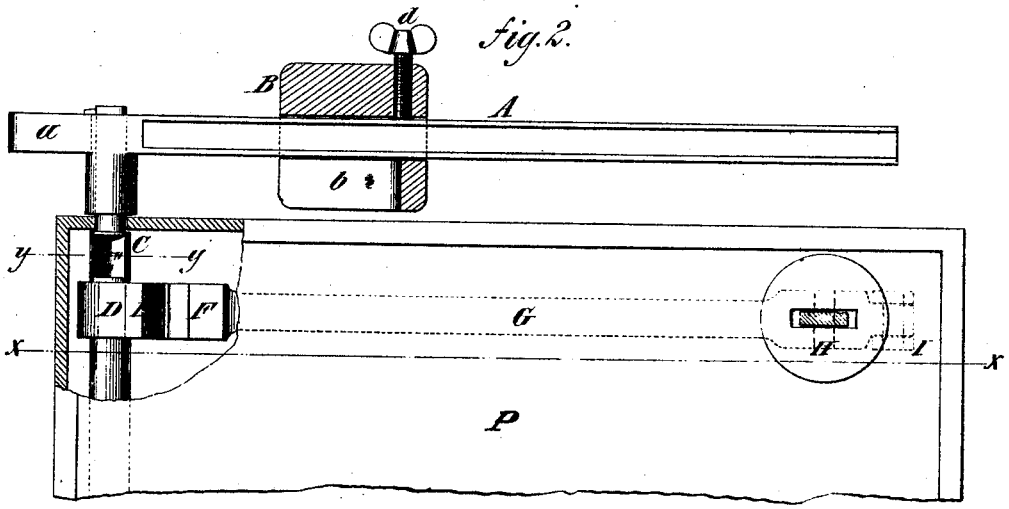
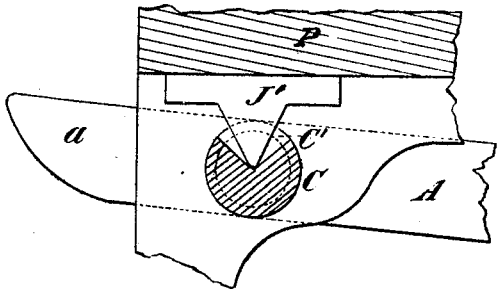


Fig. 3.



WITNESSES:

Gustave Dieterich

Chas. Nida.

INVENTOR:

Frank G. Johnson

UNITED STATES PATENT OFFICE.

FRANK G. JOHNSON, OF NEW YORK, N. Y.

IMPROVEMENT IN HEALTH-LIFTS.

Specification forming part of Letters Patent No. **183,763**, dated October 31, 1876; application filed April 17, 1876.

To all whom it may concern:

Be it known that I, FRANK G. JOHNSON, of the city, county, and State of New York, have invented a new and useful Improvement in the Construction of Health-Lifts; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1 represents a vertical section, Fig. 2 a plan view, partly in section, and Fig. 3 an enlarged view, of a portion of Fig. 1.

The nature of my invention consists in arranging compound levers in such a manner that within a small compass a light weight of a few pounds will balance or resist a heavy weight, and so arranging the light weight upon one of the levers that it may be shifted so as to indicate the amount that may be desired to be lifted, from one to a thousand or more pounds.

The construction and operation of my machine are more fully described as follows:

P represents a platform suitably elevated, and supported by legs R R, Fig. 1, to make room below the platform to arrange the levers G G and shaft C. G is a lever having its fulcrum at I, its short arm from I to H, and its long arm from I to F. The face of the movable end of this lever at F is a portion of a circle, the center of which is the fulcrum I. There are two of these levers. D is a short lever, the fulcrum of which is the center of the shaft C. The end of this lever D forms a portion of a circle, the center of which is the center of the shaft C. The shaft C extends from one side to the other of the platform, and projects beyond the platform at one end. Upon this projecting portion of the shaft is fastened the long lever or scale-beam A. There are two of the short levers D. Upon the scale-beam A is placed a sliding weight, B, which is securely held in any given position by means of the thumb set-screw *d*. The upper face of the scale-beam A is divided into spaces by figures, lines, and dots, to indicate where the weight B is to be placed to indicate the weight to be lifted. The lift is taken from the point H on the lever G by means of the rod T, passing through the platform, and being furnished with suitable handles. E is a thin flat flexible strip of metal, extending between the circular face or end of the long arm of the lever G and the circular face or end of the lever D. The upper end of this flat flexible strip of metal is securely fastened to the top of the circular face of the long arm F of lever G, and the lower end is fastened to the bottom of the circular face of the lever D. The space between the arms D and F is only sufficient to admit of the thin flexible strip of metal without friction. By means of the circular ends or faces of the arms F and D, the length of these arms is not varied by their motion, or by any change in their height, and a vertical action between them is always maintained. By uniting them with the flexible strip of metal E obstructing friction is obviated.

In order to take a light lift on the machine without employing a weight too light for heavy lifting, I extend the scale-beam A back beyond its fulcrum, as shown by *a*, and slot the weight B, as shown at *b*, by means of which the weight can pass beyond the shaft C sufficiently to throw the center of gravity of the weight at the fulcrum C or upon the back extension *a*, by which the weight is made to balance itself, or even to assist in lifting the levers A and G, if they should be too heavy for taking the lightest desirable lift.

By this construction of the weight and scale-beam, a lift of from one to a thousand or more pounds can be afforded on the same machine by the same weight.

In order to make use of the above-described arrangement of the weight, the shaft C must extend beyond its bearing, and necessarily requires to be of considerable size, thereby causing considerable friction. To obviate this friction, and not diminish the strength of the extended portion of the shaft which carries the scale-beam A, there is provided in the stronger portion of the shaft C a **V**-shaped indentation or slot, C′, the bottom or angle of which is at the center of the diameter of the shaft. J′ is a steel **V**-shaped bearing or knife-edge, upon which works the bottom of the slot C′. The **V**-shaped slot C′ is as much longer than

the knife-edge J′ as is necessary to allow the needed rotating motion of the shaft C in raising the weight B.

By this arrangement, and by making the extended portion of the shaft which carries the scale-beam A smaller than the hole which it passes through beyond the bearing C′, the friction of this end of the shaft is quite obviated, as all the pressure of the fulcrum comes on the steel knife-edge J′.

Having thus explained my invention, what I claim, and desire to secure by Letters Patent, is—

1. In a health-lift, the combination of the levers G G and D D, their adjacent ends being curved, with the shaft C, scale-beam A, and weight B, substantially in the manner and for the purposes set forth.

2. The flexible metallic strap E, in combination with the levers G and D, in the manner and for the purpose described.

3. The combination of the knife-edge J′ and the V-shaped groove C′ in the shaft C, by which the shaft takes the bearing at its center of motion, substantially in the manner and for the purpose set forth.

4. The weight B, having the slot *b*, in combination with the scale-beam A *a*, as described, and for the purposes set forth.

FRANK G. JOHNSON.

Witnesses:
R. KNOX,
G. M. KENDALL.